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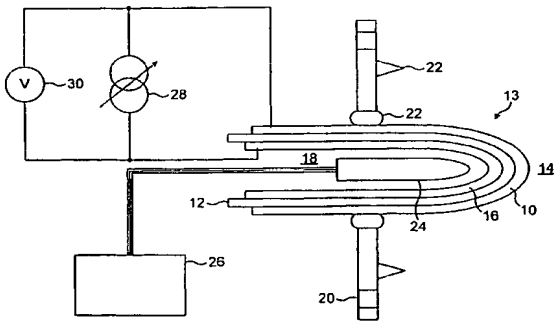
(54) Title: ELECTROCHEMICAL SENSOR



(57) Abstract: An organic contaminant molecule sensor is described for use in a low oxygen concentration monitored environment. The sensor comprises an electrochemical cell, which is formed from a measurement electrode coated with (or formed from) a catalyst having the ability to catalyse the dissociative adsorption of the organic contaminant molecule, the electrode being positioned for exposure to the monitored environment, a reference electrode coated with (or comprised from) a catalyst selected for its ability to catalyse the dissociation of oxygen to oxygen anions, the reference electrode being positioned within a reference environment, and a solid state oxygen anion conductor disposed between and bridging the measurement and reference electrodes, wherein oxygen anion conduction occurs at or above a critical temperature, T_c. Sealing means are provided for separating the reference environment from the monitored environment. Means are also provided for controlling and monitoring the temperature of the cell, and for controlling the electrical current (I_p) flowing between the reference and measurement electrodes. At temperatures (T_{ads}) below T_c, organic contaminant molecules are adsorbed onto and dissociated at the surface of the measurement electrode leading to the build up of carbonaceous deposits at the surface thereof. At temperatures (T_{lit}) above T_c, an electrical current (I_p) is passed between the reference and measurement electrode thereby to control the number of oxygen anions passing from the reference electrode to the measurement electrode to oxidise the carbonaceous deposits formed at the surface thereof and the formation of carbon dioxide.

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